



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,549	11/13/2003	Ted D. Grabau	06005/39710	9178

4743 7590 08/08/2006

MARSHALL, GERSTEIN & BORUN LLP
233 S. WACKER DRIVE, SUITE 6300
SEARS TOWER
CHICAGO, IL 60606

EXAMINER

LEE, RIP A

ART UNIT PAPER NUMBER

1713

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5

Office Action Summary	Application No.	Applicant(s)	
	10/712,549	GRABAU, TED D.	
	Examiner	Art Unit	
	Rip A. Lee	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action follows a response filed on July 10, 2006. Claims 34-41 are pending.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 34-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuckey (U.S. 5,727,529) in view of Yamagishi *et al.* (U.S. 6,003,876), and further in view of Hisada (U.S. Patent No. 3,834,231).

Tuckey discloses a fuel pressure control unit that includes a housing that encloses a flexible diaphragm valve. This flexible diaphragm membrane is biased by a spring into direct engagement with another valve (*i.e.*, the device qualifies as “actuator”). As seen in Figure 2, diaphragm 64 is compressed between two flange structures of body 42 and cap 44. According to the inventors, the diaphragm is made of a flexible acrylonitrile butadiene rubber that may be reinforced with a fabric embedded in the elastomer (col. 4, lines 43-46). Other than this brief description, Tuckey does not elucidate the constitution of this rubber material.

Yamagishi *et al.* teaches a composition comprising 100 phr of nitrile butadiene rubber (1-50 wt % nitrile content; JSR N640H), 45 phr of silica (Carplex 1120), 1 phr of silane coupling agent (KBM 503), 5 phr of DOP plasticizer, and 3 phr of vulcanizing agent (Percumyl D-40) in Table 1, Example 1. The composition has excellent mechanical strength and oil resistance, and it is used as a sealing member.

One of ordinary skill in the art would have found it obvious to use the composition disclosed in Yamagishi *et al.* as the diaphragm membrane material for the assembly shown in the primary reference because Tuckey instructs that nitrile butadiene rubber is to be used. One of ordinary skill in the art would have found it obvious to use the elastomer formulation of Yamagishi *et al.* because it has been shown to make an article having similar operation. That is,

Art Unit: 1713

the skilled artisan would find it obvious to use the composition to make a seal, gasket, or membrane (as opposed to a tire tread) especially after having been shown that the composition is moldable into a sealing member. The combination is especially obvious because the NBR in Yamagishi *et al.* has good oil resistance properties. As such, the skilled artisan would have expected with a reasonable expectation of success to make the composition of Yamagishi *et al.* into a diaphragm membrane having good fuel resistance.

Although neither reference discloses coating the flanges with a resin coating composition, one of ordinary skill in the art would have found it obvious to secure the membrane with adhesive in order to prevent slippage of the membrane. Hisada shows that a diaphragm in an actuator assembly may be secured to the flange by compressive means and by use of an adhesive (col. 7, line 15 and 25). One of ordinary skill in the art would have found it obvious to arrive at the subject matter of instant claims 34 and 35 by applying adhesive in order to secure a diaphragm to a flange because this unexceptional practice is disclosed to work in the prior art. There is no indication that bonding occurs between plasticizer and resin, however, in view of the fact that the composition of Yamaguchi *et al.* contains plasticizer as recited in the instant claims, a reasonable basis exists to believe that “bonding” will occur between the epoxy resin and the plasticizer as claimed. Since the PTO can not perform experiments, the burden is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

One of ordinary skill in the art also would have found it obvious to arrive at the subject matter of claims 36-39 because Hisada teaches oil resistant diaphragms formed from a cloth or fabric that has been coated on both sides with vulcanized NBR to make the fabric impermeable (col. 5, lines 13-17 and 60-66). The fabric that is typically employed for this purpose is polyamide or polyester (col. 5, lines 10-12), and diaphragms incorporating these fabrics exhibit better performance in terms of resilience compared with conventional diaphragms (col. 9, lines 22-33 and 47-50). It would have been obvious to one having ordinary skill in the art to use polyamide or polyester reinforced NBR, as shown in Hisada, as the membrane in Tuckey because such an embodiment is contemplated. The combination of teachings is especially obvious because both references relate to use of fabric reinforced NBR as membranes.

3. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tuckey in view of Yamagishi *et al.* and Hansen *et al.*, and further in view of Scott *et al.* (U.S. 4,488,341).

Hansen *et al.* does not indicate the nature of the adhesive, however, one of ordinary skill in the art would have found it obvious to use epoxy adhesive as the adhesive component in light of the fact that Scott *et al.* teaches that epoxy is an excellent adhesive for securing a rubber diaphragm to a flange (col. 5, line 35).

Response to Arguments

4. Applicant's arguments have been considered fully, and they are persuasive with respect to the merits of the *prima facie* case of obviousness based on the references Tuckey (U.S. 5,727,529) in view of Yamagishi *et al.* (U.S. 6,003,876), and further in view of Hansen *et al.* (U.S. Patent No. 4,022,114). Therefore, all rejections set forth in the previous office action have been withdrawn

Art Unit: 1713

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

ral

August 7, 2006



DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700